

CLAIMS:

1. An image sensor comprising:
a plurality of pixels in which at least two or more pixels have a
5 charge control structure used to change charge capacity during the integration
time; wherein at substantially a beginning of an exposure time the charge capacity
is altered to substantially zero by either the charge control structure or a read-out
mechanism and the charge capacity is changed by the charge control structure
throughout the exposure time such that substantially no portion of the pixel photo
10 response curve is substantially linear.
2. The image sensor as in claim 1, wherein multiplying each
pixel by a substantially constant value compensates variations of the charge
capacity.
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3. The image sensor as in claim 1, wherein the charge capacity
control structure is pulsed so as to substantially reproduce the photo response
curve.
- 20 4. The image sensor as in claim 2, wherein the charge capacity
control structure is pulsed so as to substantially reproduce the photo response
curve.
5. The image sensor as in claim 2, wherein a look up table is
25 used to translate the photo response curve into linear space for color filter
processing.
6. The image sensor as in claim 2, wherein multiplying gain
change values are stored in a digital camera.
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7. The image sensor as in claim 1, wherein the capacity control structure is adjusted to produce the desired photo response curve substantially entirely within the duration of a flash lamp exposure.
- 5 8. The image sensor as in claim 1, wherein the image sensor is disposed in a digital camera that includes a mechanism to switch between linear and nonlinear photo response.
9. The image sensor as in claim 1, wherein the image sensor is
10 an interline CCD in which images are substantially read out of a vertical CCD before starting the integration in photodiodes of any next images.
10. A camera comprising:
an image sensor comprising a plurality of pixels in which at least
15 two or more pixels have a charge control structure used to change charge capacity during the integration time; wherein at substantially a beginning of an exposure time the charge capacity is altered to substantially zero by either the charge control structure or a read-out mechanism and the charge capacity is changed by the charge control structure throughout the exposure time such that substantially
20 no portion of the pixel photo response curve is substantially linear.
11. The camera as in claim 10, wherein multiplying each pixel by a substantially constant value compensates variations of the charge capacity.
- 25 12. The camera as in claim 10, wherein the charge capacity control structure is pulsed so as to substantially reproduce the photo response curve.
13. The camera as in claim 11, wherein the charge capacity
30 control structure is pulsed so as to substantially reproduce the photo response curve.

14. The camera as in claim 11, wherein a look up table is used to translate the photo response curve into linear space for color filter processing.

5 15. The camera as in claim 11, wherein multiplying gain change values are stored in a digital camera.

10 16. The camera as in claim 10, wherein the capacity control structure is adjusted to produce the desired photo response curve substantially entirely within the duration of a flash lamp exposure.

17. The camera as in claim 10, wherein the image sensor is disposed in a digital camera that includes a mechanism to switch between linear and nonlinear photo response.

15 18. The camera as in claim 10, wherein the image sensor is an interline CCD in which images are substantially read out of a vertical CCD before starting the integration in photodiodes of any next images.